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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,438	01/31/2001	Dennis L. Salbilla	P02104US0/10100157	3287

7590 01/10/2006  
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EXAMINER

CHORBAJI, MONZER R

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/773,438	Applicant(s) SALBILLA, DENNIS L.	
	Examiner MONZER R. CHORBAJI	Art Unit 1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5,6,14,15,27 and 29-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,14,15,27 and 29-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

**This non-final action is in response to the RCE/Amendment received on 10/28/2005**

#### ***Claim Objections***

1. Claims 29, 30, 32-35 and 38 are objected to because of the following informalities:

In claim 29, line 1; applicant uses the term "process component". It is not clear to what process the applicant is referring. Does the applicant refer to petrochemical refining? Explanation and re-wording of claim 29 is required. The same applies to claims 30, 32-35 and 38. In this action, the examiner will construe the term as referring to petrochemical refining processes.

In claim 32, line 2; applicant uses the term "process run". It is not clear to what process or run the applicant is referring. Does the applicant mean by reciting the feature "process run" as representation to a step in the process of oil refining? Explanation and re-wording of claim 29 is required. The same applies to claims 33-34 and 38. In this action, the examiner will construe the term as referring to petrochemical refining processes.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 29, 32-33 and 39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 29, line 7; applicant uses the term "continuously applying the electric charge". However, the disclosure does not teach such a feature. The same applies to claim 32.

In claim 33, applicant recites terminating the electric charge to the process components after the process run. The disclosure does not teach such a step.

In claim 39, applicant recites stopping the flow of the liquid hydrocarbon process stream prior to stopping the application of the electric charge. The disclosure does not teach such a step.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1, 6 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 3; applicant uses the word "continual". While continual is a synonym of constant, the disclosure as a whole only teaches applying either constant or alternating electric charge. The disclosure does not teach applying continual electric charge over a period of time. Does the applicant mean by the word continual to refer to the type of electric charge or to applying continual electric charge over a time period?

The same applies to claims 6 and 27. In this action, the examiner will construe the word "continual" as referring to the type of electric charge.

In claim 1, line 3; applicant uses the word "an object". In the context of claim 1, the examiner is unable to construe the meaning of this term. Does the applicant mean by an "object" as a contaminant or a heat exchanger? In this action, the examiner will construe the term "an object" as referring to a heat exchanger. The same applies to claim 27.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 32 and 35-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Carson (U.S.P.N. 4,505,758).

With respect to claim 32, the Carson reference discloses a method for processing a liquid hydrocarbon process stream (col.2, lines 12-15 and lines 56-60) that includes the following: initiating a process run of a liquid hydrocarbon process stream through a heat exchanger, which is capable of exchanging heat with the process stream (in col.2, lines 56-60 where the Carson reference applies electric charge to heat exchangers in the field of oil refineries where the flow of a liquid hydrocarbon process stream has been initiated), initiating an electric charge to process components (in col.3, lines 63-68 and col.4, lines 1-7, the Carson reference provides an example of applying

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electrical charge to a heat exchanger receiving hydrocarbon liquid stream after being processed by hydrocracking apparatus), flowing the liquid hydrocarbon process stream through a heat exchanger (see col.3, lines 63-68 and col.4, lines 1-7 where liquid hydrocarbon product is flowing through a heat exchanger) having the electric charge applied thereto and while flowing the liquid hydrocarbon process stream continually apply constant electric charge (in col.2, lines 18-20 and col.3, lines 59-62 where electric current is continually applied over a time interval of less than 5 minutes) to a heat exchanger.

With respect to claims 35-37, the Carson reference teaches applying electric current to the chassis (figure 1:1 and 14 where the inlet header box is the supporting frame for the heat exchanger) or to the shell of a heat exchanger (figure 1, 4 and 13).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 33 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson (U.S.P.N. 4,505,758).

With respect to claim 33, the Carson reference teaches applying electric current intermittently while simultaneously passing hydrocarbon fluid (col.6, lines 10-15) in petrochemical plants that intrinsically run various processes (col.2, lines 56-60). The Carson reference does not explicitly teach intermittently applying electric current to heat exchangers in a petrochemical plants before or during or after a certain refining process. However, since the Carson reference teach treating heat exchangers in a petrochemical plant without interrupting the plant operations (col.2, lines 27-32), then the Carson reference intrinsically teach applying the electric current to heat exchangers before or during or after any refining process.

With respect to claim 39, the Carson reference teaches that in petrochemical plants it is known to shut down the plants once a year for maintenance and repair (col.1, lines 38-40). Also, the Carson reference teaches applying electric current intermittently while simultaneously passing hydrocarbon fluid (col.6, lines 10-15) in petrochemical plants that intrinsically run various processes (col.2, lines 56-60). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to maintain applying electric currents intermittently to heat exchangers briefly after shutting down the plant for yearly repair in order to insure that all coronene deposits (col.4, lines 8-10) have been removed.

10. Claims 1, 5-6, 27, 29-31, 34 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson (U.S.P.N. 4,505,758) in view of Harms (U.S.P.N. 3,933,606).

With respect to claim 1, the Carson reference discloses a method (col.2, lines 12-15) for reduction of fouling of process components with a liquid hydrocarbon stream oil refining plants (col.2, lines 56-60 and col.4, lines 8-11) that includes applying a continual electric charge (in col.2, lines 18-20 and col.3, lines 59-62 where electric current is constant and is continually applied over a time interval of less than 5 minutes) to an object (coronene) within the flow path of the liquid hydrocarbon stream by flowing the stream past the continual electric charge. In addition, the Carson reference applies electric charge while flowing the hydrocarbon streams. The Carson reference fails to teach the step of adjusting the magnitude of the continual electric charge. The Harms reference, which is in the art of treating contaminated water by electrolytically removing suspended and dissolved impurities, teaches that it is known to vary the magnitude of the electrical charge applied to the fluid in order to affect a desired degree of contaminant removal depending upon the composition of the water being treated (col.5, lines 57-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of the Carson reference to include an electric charge magnitude adjustment step as taught in the Harms reference in order to affect a desired degree of contaminant removal in the fluid being treated (col.5, lines 57-61).

With respect to claim 27, the Carson reference discloses a method (col.2, lines 12-15) for cleaning heat exchangers in oil refining plants (56-60) including applying a continual electric charge (in col.2, lines 18-20 and col.3, lines 59-62 where electric current is constant and is continually applied over a time interval of less than 5 minutes)



to an object (coronene) within the flow path of the liquid hydrocarbon stream by flowing the stream past the continual electric charge. The Carson reference applies continual constant electric charge to heat exchangers in the field of oil refineries such that the steps and apparatuses involving catalytically cracking and subsequent processing of crude oil are all intrinsic features of refineries that result in an improved hydrocarbon processing efficiency. In addition, the Carson reference applies electric charge while flowing the hydrocarbon streams. The Carson reference fails to teach the step of adjusting the magnitude of the continual electric charge. The Harms reference, which is in the art of treating contaminated water by electrolytically removing suspended and dissolved impurities, teaches that it is known to vary the magnitude of the electrical charge applied to the fluid in order to affect a desired degree of contaminant removal depending upon the composition of the water being treated (col.5, lines 57-61).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of the Carson reference to include an electric charge magnitude adjustment step as taught in the Harms reference in order to affect a desired degree of contaminant removal in the fluid being treated (col.5, lines 57-61).

With respect to claim 29, the Carson reference discloses a method (col.2, lines 12-15) for cleaning heat exchangers in oil refining plants (56-60) that results in preventing fouling of liquid hydrocarbon process streams (col.4, lines 8-11) that includes the following: initiating a constant electric charge (col.2, lines 18-21) to liquid hydrocarbon process streams having contaminants (col.4, lines 8-11) flowing through a

heat exchanger, initiating a flow of the liquid hydrocarbon stream past the electric charge applied to a heat exchanger (in col.3, lines 63-68 and col.4, lines 1-7, the Carson reference provides an example of applying electrical charge to a heat exchanger receiving hydrocarbon liquid stream after being processed by hydrocracking apparatus) and continuously applying the electric charge to the flowing liquid hydrocarbon stream (the Carson reference teaches flowing the liquid hydrocarbon process stream through a heat exchanger, see col.3, lines 63-68 and col.4, lines 1-7 where liquid hydrocarbon product is flowing through a heat exchanger by having a constant electric charge applied thereto and while flowing the liquid hydrocarbon process stream continuously apply constant electric charge (in col.2, lines 18-20 and col.3, lines 59-62 where electric current is continuously applied over a time interval of less than 5 minutes). The Carson reference fails to teach the step of adjusting the magnitude of the electric charge. The Harms reference, which is in the art of treating contaminated water by electrolytically removing suspended and dissolved impurities, teaches that it is known to vary the magnitude of the electrical charge applied to the fluid in order to affect a desired degree of contaminant removal depending upon the composition of the water being treated (col.5, lines 57-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of the Carson reference to include an electric charge magnitude adjustment step as taught in the Harms reference in order to affect a desired degree of contaminant removal in the fluid being treated (col.5, lines 57-61).

With respect to claims 5-6 and 30-31, the Carson reference discloses applying an electric charge to a heat exchanger (abstract) and applying a continual electric charge (in col.2, lines 18-20 and col.3, lines 59-62 where electric current is constant and is continually applied over a time interval of less than 5 minutes) to the shell of a heat exchanger (figure 1, 4 and 13-14).

With respect to claims 34 and 38, the Carson reference teaches applying a constant electric charge while flowing the hydrocarbon streams, but fails to teach the step of adjusting the magnitude of the electric charge. The Harms reference, which is in the art of treating contaminated water by electrolytically removing suspended and dissolved impurities, teaches that it is known to vary the magnitude of the electrical charge applied to the fluid in order to affect a desired degree of contaminant removal depending upon the composition of the water being treated (col.5, lines 57-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of the Carson reference to include an electric charge magnitude adjustment step as taught in the Harms reference in order to affect a desired degree of contaminant removal in the fluid being treated (col.5, lines 57-61).

**11.** Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson (U.S.P.N. 4,505,758) in view of Harms (U.S.P.N. 3,933,606) as applied to claim 1 and further in view of Sivavec et al (U.S.P.N. 6,451,210).

With respect to claims 14-15, both the Carson reference and the Harms reference fail to disclose a step for determining the level of the contaminants in the

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liquid hydrocarbon stream. The Sivavec reference, which is in the art of treating a contaminated liquid streams (col.2, lines 32-36), teaches the use of a sensing module to detect the level of contaminants in such streams. The Sivavec reference further teaches that once the concentration has been determined the liquid is passed to an adsorption zone, which can include a filter or precipitation unit. A turbidity-sensing unit can be used to direct and aqueous VOC stream to a filter or precipitation unit, prior to carbon bed treatment. Other treatment processes include ion exchange beds, air stripping columns and filters (col.2, line 30 to col.3, line 25). This reference has been relied upon to teach that it is known to measure the concentration of contaminants prior to treatment in order to determine the correct type of treatment. As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of the Carson reference to include a step of measuring the contaminant concentration in the fluid stream in order to determine the correct treatment parameters as taught by the method of the Sivavec reference.

#### ***Remarks***

12. The amendment to the specification submitted on 10/28/2005 has been accepted.

#### ***Response to Arguments***

13. Applicant's arguments filed 10/28/2005 have been fully considered but they are not persuasive.

On page 10 of the Remarks section, applicant argues that, "Clearly, at least this disclosure of the specification reasonably conveys that since fouling develops over time

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and during the process, the application of the charge can be on, continual, or constant during the process run to prevent or significantly reduce the frequency of maintenance due to accumulated fouling.” The examiner disagrees since upon reading the specification, the disclosure as a whole teaches applying two types of electric charge as either constant or modulated. Nowhere does the disclosure teach applying continuous or continual electric charge in the context of over time interval. The disclosure teaches that to prevent the accumulation of contaminants, constant or modulated electric charge can be applied without teaching of continuous or continual application of electric charge. Furthermore, the disclosure does not show any time concept in relationship to applying electric charge. Thus, the specification does not reasonably convey continuous or continual application of electric charge. The fact that the disclosure teaches applying two types of electric charge (constant or modulated) does not mean applying electric charge continuously or continually. The word “constant” is construed to the type of electric charge not to mean explicitly or implicitly any relation to continuous or continual application over time period. In fact, the Carson reference teaches applying constant electric charge (col.2, lines 18-21) while flowing the liquid hydrocarbon process stream continually or continuously (in col.2, lines 18-20 and col.3, lines 59-62 where electric current is continually applied over a time interval of less than 5 minutes) to a heat exchanger. Clearly, the constant electric charge of the Carson reference is applied continuously or continually over a time period of less than 5 minutes.

On page 11 of the Remarks section, applicant argues that, “In other words, Carson is a removal or cleaning process, not a preventive process.” The examiner


disagrees since the intermittent applications of the constant electric current that is continuously or continually applied over certain time intervals result in preventing the build up of deposits of contaminants such as coronene (col.4, lines 8-11).


***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHARD D. CRISPINO can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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